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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

This Advisory Action for US Patent Application 10/716,316 is in response to the amendment after a Final rejection under 37 CFR 1.116. This amendment has been entered. Currently, claims 1-18 are pending.

Response to Arguments

Applicant has itemized a list of adverse elements of the prior Office action in presenting arguments. These arguments will be discussed below in accordance with the applicant's arrangement.

I. Objection to Drawings

Applicant's amendment to the specification, clarifying that figure 1 is directed to embodiments of the present invention, has been fully considered. The objection to figure 1 for lacking a "Prior Art" label has been withdrawn.

II. Double Patenting Claim Rejections

At applicant's request, the double patenting rejection of claims 1, 2, 5, 8, 9, 12, and 13 has been held in abeyance until allowable subject matter is indicated.

III. Claims 1-4

Applicant's arguments filed with respect to claims 1-4 have been fully considered but they are not persuasive. Applicant argues that Noh et al. does not teach the claimed "scaling relaxation value" of claim 1.

In Noh et al., figure 6 illustrates an adjustment in the variation of the quantization factor. This adjustment is an adjustment of the quantization factor K, which in turn is in proportion to the deviation parameter D (column 8: lines 54-60). This deviation parameter is calculated from the degree that the present bit rate deviates from the target bit rate. If the present bit rate is not within the allowable range, "deviation parameter D becomes 1 and the value of K has the limitiation value L that is the maximum value. **In other words, the quantization factor Q(t) of the present frame is allowed to increase** by Lx100% compared to the quantization factor Q(t-1) of the previous frame" (column 8: lines 31-42, emphasis added). So, if the deviation parameter is increased to the maximum value, the amount that the quantization factor can increase is relaxed. If the deviation is small, and the present bit rate falls within a range of the allowable bit rate, "the value K is not determined to be the largest value, but is adjusted to be within a predetermined range", dependent on D, tightening the allowable variation in the quantization factor (column 8: lines 42-53).

Therefore, it is respectfully submitted that Deviation Parameter D of Noh et al. corresponds with the claimed "scaling relaxation value" of claim 1, and the adjustment of quantization factor variation parameter K according to D in Noh et al. is the claimed adjustment of a scaling value with a scaling relaxation value.

IV. Claims 5-7

Applicant's arguments filed with respect to claims 5-7 have been fully considered but they are not persuasive. Applicant argues that Chiang et al. does not teach the claimed limitation of combining a complexity measure for a current digital video picture

to a running average for a series of digital video pictures in a manner that prevents the current digital video picture from significantly changing the running average complexity measure. Specifically, Applicant states that while Chiang et al. discloses determining a quantizer scale from an average of quantizer scales in previous picture, Chiang does not disclose combining a complexity measure for the current picture with a running average complexity measure.

The examiner respectfully disagrees. While it is true that in Chiang, the initial complexity model in equation (5) produces an initial estimate for the number of bits Ri allocated to a macroblock and quantizer scale Qi for the macroblock based on the average quantizer scales used to code the macroblocks in the previous picture (column 10: lines 50-67), this is not the final determination of the quantizer for the current macroblock. Rather, the initial estimate Qi is modified with modifier γ based on the activity of the current macroblock (column 11: line 31–column 12: line 39), producing a final quantization value Q(i) to maintain a visual quality. The optimal quantizer is then used to update the constants X0, X1, and X2 that will be used to calculate Qi for the next macroblock, "to account for the discrepancy between the bits allocated to the macroblock i and the actual number of bits needed to code the macroblock for a particular quantizer scale" (column 11: lines 16-20).

It is respectfully submitted, therefore, that the calculation of quantizer scale Q(optimal), determined by multiplying Qi, found from the complexity of previous pictures, and γ, found from the complexity of the current macroblock, and using the optimal quantizer scale to update parameters used for calculating the quantizer scale in

the next macroblock, corresponds with the process of claim 5, since Chiang states that the complexity measure of a macroblock is a function of the quantizer scale of the macroblock, with this functional relationship extended to the picture layer (column 10: lines 20-24).

V. Claims 8-11

As noted by applicant, claims 8-11 were rejected under the same grounds of rejection as claims 1-4. These rejections are respectfully maintained. See Section III of the present action.

VI. Claims 12-14

As noted by applicant, claims 12-14 were rejected under the same grounds of rejection as claims 5-7. These rejections are respectfully maintained. See Section IV of the present action.

VII. Claims 15-16

Applicant's arguments filed with respect to claims 15-16 have been fully considered but they are not persuasive. Applicant argues that Noh et al. does not disclose the claimed "relaxation control value" of claim 15. However, as stated in section III of the present action, it is respectfully submitted that deviation parameter D of Noh et al. is a "relaxation control value" in accordance with the present invention.

VIII. Claims 17-18

As noted by applicant, claims 17-18 were rejected under the same grounds of rejection as claims 15-16. These rejections are respectfully maintained. See Section VII of the present action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,263,020 B1 (Gardos et al.) teaches a bit rate control system that selects the quantization parameter for a macroblock of a video frame based on the number of bits appearing in the current frame up to the current macroblock and the number of bits appearing in the previous frame up to the macroblock in the same position.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner, whose telephone number is (571)272-9662. The examiner can normally be reached on MWF from 9:00-6:30, TR from 9:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri, can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/D. N. W./
Examiner, Art Unit 2621

/Mehrdad Dastouri/
Supervisory Patent Examiner, Art Unit 2621